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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,827	06/22/2001	Joseph A. Abys	Abys 52-14-6-6	7859

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EXAMINER

LEWIS, MONICA

ART UNIT PAPER NUMBER

2822

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

E/C

**Office Action Summary**

Application No.

09/887,827

Applicant(s)

ABYS ET AL.

Examiner

Monica Lewis

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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### **DETAILED ACTION**

1. This office action is in response to the request for continued examination filed April 26, 2006.

#### ***Continued Examination Under 37 CFR 1.114***

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/26/06 has been entered.

#### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1-6, 11 and 12 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1, 4-6, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Soeda et al. (Japanese Patent No. 1-259195).

In regards to claim 1, Soeda et al. ("Soeda") discloses the following:

a) a metal substrate (For Example: See Page 4 under Operations of the Invention);  
and

b) overlying the substrate a surface finish comprising a layer of tin or tin alloy in an internal tensile stress state (For Example: See Page 5).

In regards to claim 4, Soeda discloses the following:

a) an underlayer of nickel, nickel alloy, cobalt, cobalt alloy, iron or iron alloy chosen to generate or maintain tensile stress in the layer of tin or tin alloy above the underlayer (For Example: See Page 4 under Operations of the Invention).

In regards to claim 5, Soeda discloses the following:

a) the tin or tin alloy has a thickness in the range .5 to 10 micrometers (For Example: See Page 5).

Additionally, the applicant has not established the critical nature of the tin or tin alloy has a thickness in the range .5 to 10 micrometers. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claim 6, Soeda discloses the following:

a) the underlayer has a thickness in the range of 0-20 micrometers (For Example: See Page 4).

Finally, the applicant has not established the critical nature of the dimension of underlayer which has a thickness in the range of 0-20 micrometers. "The law is replete with

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cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.” *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claim 11, Soeda discloses the following:

a) the tensile stress inhibits whisker growth (For Example: See Page 5).

In regards to claim 12, Soeda discloses the following:

a) the internal stress is attributable to the layer being deposited under tensile stress (For Example: See Page 5).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as obvious over Soeda et al (Japanese Patent No. 1-259195) in view of Tsujita et al. (Japanese Patent No. 51-143533).

In regards to claim 2, Soeda fails to disclose the following:

a) a layer of tin or tin alloy has an average grain size in excess of about 1 micrometer.

However, Tsujita et al. (“Tsujita”) discloses a semiconductor device that has a layer of tin or tin alloy has an average grain size in excess of about 1 micrometer (For Example: See

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Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Soeda to include a grain size in excess of about 1 micrometer as disclosed in Tsujita because it aids in reducing the formation of whiskers (For Example: See Abstract).

Additionally, since Soeda and Tsujita are both from the same field of endeavor, the purpose disclosed by Tsujita would have been recognized in the pertinent art of Soeda.

Finally, the applicant has not established the critical nature of the dimension of grain size in excess of about 1 micrometer. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

8. Claim 3 is rejected under 35 U.S.C. 103(a) as obvious over Soeda et al (Japanese Patent No. 1-259195).

In regards to claim 3, Soeda fails to disclose the following:

a) the average tensile stress is in excess of about 2 Mpa.

However, the applicant has not established the critical nature of the dimension of stress which is in excess of about 2 MPa. "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).


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***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300 for regular and after final communications.

ML

July 1, 2006

A handwritten signature in black ink, appearing to be 'ML' with a long, sweeping horizontal stroke extending to the right.